

SEQUENCE LISTING

SEQ ID NO:1

2C19 (internal deletion, and His tagged) coding sequence.

ATGGCTAAGAAAACGAGCTCTAAAGGGCGGCCGCTGGCCCCACTCCTCTCCCAGTGATTGGAAATATCCTACAGATAGA
TATTAAGGATGTCAGCAAATCCTTAACCAATCTCTCAAAAATCTATGGCCCTGTGTTCACTCTGTATTTTGGCCTGGAAC
GCATGGTGGTGCTGCATGGATATGAAGTGGTGAAGGAAGCCCTGATTGATCTTGGAGAGGAGTTTCTGGAAGAGGCCAT
TTCCCCTGAGCTGAAAGAGCTAACAGAGGATTTGGAATCGTTTTTCAGCAATGGAAAGAGATGGAAGGAGATCCGGCGTTT
CTCCCTCATGACGCTGCGGAATTTTGGGATGGGGAAGAGGAGCATTGAGGACCGTGTTCAGAGGAAGCCCACTGCCTTG
TGGAGGAGTTGAGAAAAACCAAGGCTTCACCCTGTGATCCCACTTTTCATCCTGGGCTGTGCTCCCTGCAATGTGATCTGC
TCCATTATTTTCCAGAAACGTTTCGATTATAAAGATCAGCAATTTCTTAAGTTGATGGAAAAATTGAATGAAAACATCAG
GATTGTAAGCACCCCTGGATCCAGATATGCAATAATTTTCCCACTATCATTGATTATTTCCCGGGAACCCATAACAAT
TACTTAAAAACCTTGCTTTTATGGAAAGTGATATTTGGAGAAAGTAAAAGAACACCAAGAATCGATGGACATCAACAAC
CCTCGGGACTTTATTGATTGCTTCTGATCAAAATGGAGAAGGAAAAAGCAAAACCAACAGTCTGAATTCATATTGAAAA
CTTGGTAATCACTGCAGCTGACTTACTTGGAGCTGGGACAGAGACAACAAGCACAAACCTGAGATATGCTCTCCTTCTCC
TGCTGAAGCACCCAGAGGTCACAGCTAAAGTCCAGGAAGAGATTGAACGTGTCGTTGGCAGAAACCGGAGCCCCCTGCATG
CAGGACAGGGGCCACATGCCCTACACAGATGCTGTGGTGCACGAGGTCCAGAGATACATCGACCTCATCCCCACCGCCT
GCCCCATGCAGTGACCTGTGACGTTAAATTCAGAACTACCTCATTCCCAAGGGCACAACCATATTAACCTCCCTCACTT
CTGTGCTACATGACAACAAAGAAATTTCCCAACCCAGAGATGTTTGACCCTCGTCACTTTCTGCATGAAGGTGGAATTTT
AAGAAAAGTAACCTACTTCATGCCTTTCTCAGCAGGAAAACGGATTTGTGTGGGAGAGGGCCTGGCCCGCATGGAGCTGTT
TTTATTCCTGACCTTCATTTTACAGAACTTTAACCTGAAATCTCTGATTGACCCAAAGGACCTTGACACAACCTCCTGTTG
TCAATGGATTTGCTTCTGTCCCGCCCTTCTACCAGCTCTGCTTCATTCTGTCCACCACCACCACTGA

SEQ ID NO:2

Protein sequence of 2C19 coded by SEQ ID NO:1

MAKKTSSKGRPPGPTPLPVIGNILQIDIKDVSLSLNLSKIYGPVFTLYFGLERMVVLHGYEVVKEALIDLGEF
SGRGHFPLAERANRFGIVFSNGKRWKEIRRFSLMTRLNFGMGKRSIEDRVQEEAHCLVEELRKTASPCDPTFI
LGCAPCNVICSIIFQKRFDYKDQQLNLMEKLNENIRIVSTPWIQICNNFTIIDYFPGTHNKLKLNLFMESDI
LEKVKEHQESMDINNPRDFIDCFLIKMEKEKQNOQSEFTIENLVITAADLLGAGTETTTSTLRYALLLLKHPEV
TAKVQEEIERVVGRNRSRPMQDRGHMPYTDVAVHEVQRYIDLIPTSLPHAVTCDVKFRNYLIPKGTIILTSLSV
LHDNKEFPNPEMFDPRHFLHEGGNFKKSNYFMPFSAGKRICVGEGLARMEFLFLTFILQNFNLKSLIDPKDLDT
TPVVNGFASVPPFYQLCFIPVHHH

SEQ ID No:3

2C19 wild type 1B.

ATGGCTAAGAAAACGAGCTCTAAAGGGCGGCCGCTGGCCCTACTCCTCTCCCAGTGATTGGAAATATCCTACAG
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GGCCTGGAACGCATGGTGGTGTGCTGCATGGATATGAAGTGGTGAAGGAAGCCCTGATTGATCTTGGAGAGGAGTTT
TCTGGAAGAGGCCATTTCCCCTGAGCTGAAAGAGCTAACAGAGGATTTGGAATCGTTTTTCAGCAATGGAAAGAGA
TGGAAGGAGATCCGGCGTTTCTCCCTCATGACGCTGCGGAATTTTGGGATGGGGAAGAGGAGCATTGAGGACCGT
GTTCAAGAGGAAGCCCGCTGCCTTGTGGAGGAGTTGAGAAAAACCAAGCTTCACCCTGTGATCCCACTTTTCATC
CTGGGCTGTGCTCCCTGCAATGTGATCTGCTCCATTATTTTCCAGAAACGTTTCGATTATAAAGATCAGCAATTT
CTTAAGTTGATGGAAAAATTGAATGAAAACATCAGGATTGTAAGCACCCCTGGATCCAGATATGCAATAATTTT
CCCCTATCATGATTATTTTCCCGGAACCCATAACAATTAATTTAAAAACCTTGCTTTTATGGAAAGTGATATT
TTGGAGAAAGTAAAAGAACACCAAGAATCGATGGACATCAACAACCTCGGGACTTTATTGATTGCTTCTGATC
AAAATGGAGAAGGAAAAGCAAAACCAACAGTCTGAATTCATATTGAAAACCTGGTAATCACTGCAGCTGACTTA
CTTGGAGCTGGGACAGAGACAACAAGCACAAACCTGAGATATGCTCTCCTTCTCCTGTGAAGCACCCAGAGGTC
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ATGCCCTACACAGATGCTGTGGTGCACGAGGTCCAGAGATACATCGACCTCATCCCCACCGCCTGCCCATGCA
GTGACCTGTGACGTTAAATTCAGAACTACCTCATTCCCAAGGGCACAACCATATTAACCTCCCTCACTTCTGTG
CTACATGACAACAAAGAAATTTCCCAACCCAGAGATGTTTGACCCTCGTCACTTTCTGGATGAAGGTGGAATTTT
AAGAAAAGTAACCTACTTCATGCCTTTCTCAGCAGGAAAACGGATTTGTGTGGGAGAGGGCCTGGCCCGCATGGAG

CTGTTTTTATTCCTGACCTTCATTTTACAGAACTTTAACCTGAAATCTCTGATTGACCCAAAGGACCTTGACACA
ACTCCTGTTGTCAATGGATTGTCTGTCTGTCCCGCCCTTCTACCAGCTCTGCTTCATTCTGTCCACCACCACCAC
TGA

SEQ ID NO:4

Translation of SEQ ID NO:3

MAKKTSSKGRPPGPTPLPVIGNILQIDIKDVSKSLTNLSKIYGPVFTLYFGLERMVVLHGVEVVKALIDLGEF
SGRGHFPLAERANRFGIVFSNGKRWKEIRRFSLMTRLNFGMGKRSIEDRVQEEARCLVEELRKTKASPCDPTFI
LGCAPCNVICSIIIFQKRFDYKDQQFLNLMKLNENIRIVSTPWIQICNNFPTIIDYFPGTHNKLKLNLAFMESDI
LEKVKEHQESMDINNPRDFIDCFLIKMEKEKQNOQSEFTIENLVITAADLLGAGTETTSTTLRYALLLLKHPEV
TAKVQEEIERVVGRNRSPCMQRGHMPYTDVVHEVQRYIDLIPSLPHAVTCDVKFRNYLIPKGTITLSLTSV
LHDNKEFPNPEMFDRHFLDEGGNFKKSNYFMPFSAGKRICVGEGLARMELFLFTFILQNFNLKSLIDPKDLDT
TPVVNGFASVPPFYQLCFIPVHHH

SEQ ID No:5

2D6 encoding nucleic acid

ATGGCTAAAAAACCTCTTCTAAAGGCCGACCGCCGGGTCCGCTGCCGCTGCCAGGCCTGGGTAACCTGCTGCAT
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GCTTGGACCCCGGTGTTGTTCTGAACGGTCTGGCTGCTGTTCCGCGAAGCTCTGGTTACCCACGGTGAAGACACC
GCTGACCGTCCGCCGGTCCCGATCACCCAGATCCTGGGTTTGGTCCGCTTCCCAAGGTGTTTTCTGGCTCGT
TACGGACCGCTTGGCGTGAACAGCGTCGTTTCTCTGTTTCTACCTGCGTAACCTGGGTCTGGGTAAAAAATC'
CTGGAACAGTGGGTTACCGAAGAAGCTGCATGCCTGTGCGCTGCTTTCGCTAACCACTCTGGTTCGTCCGTTCCGT
CCGAACGGTCTGCTGGACAAAGCTGTTTCTAACGTTATCGCTTCTCTGACCTGCCGCCGCCGTTTTCGAATACGAC
GACCCCGCTTCTCTGCGTCTGCTGGACCTGGCTCAGGAAGGTCTGAAAGAGGAGTCTGGTTCCTGCGTGAAGTT
CTGAACGCTGTTCCGGTTCGCTGCACATCCCAGCTCTGGCTGGTAAAGTTCTGCGTTTCCAGAAAGCATTCCCTG
ACCCAGCTGGACGAACTGCTGACCGAACACCGTATGACCTGGGACCCGGCTCAGCCGCCACGTGACCTGACCGAA
GCTTTCCTGGCTGAAATGGAAAAAGCTAAAGGTAACCCGGAATCTTCTTCAACGATGAAAATCTGCGTATCGTT
GTTGCTGACCTGTTCTCCGCCGGTATGGTTACCACCTCTACCACCTGGCTTGGGGTCTGCTGCTGATGATCCTG
CACCCGGATGTACAGCGTCGTGTTACAGCAGGAAATCGACGACGTATTGGCCAGGTTTCGTCCGCCGGAATGGGT
GACCAGGCTCACATGCCGTACACCACCGCTGTTATCCACGAAGTTCAGCGCTTCGGTGACATCGTTCCGCTGGGT
ATGACCCACATGACCTCTCGTGACATCGAAGTTCAGGGTTTCCGTATCCCGAAAGGTACCACCTGATCACCAC
CTGTCTTCTGTTCTGAAAGACGAAGCTGTTTGGGAAAAACCGTTCCGTTTCCATCCGGAACACTTCTGGACGCT
CAGGGTCACTTCGTTAAACCGGAAGCTTTCCTGCCGTTCTCTGCTGGTTCGTGCTGCTTGCCTGGGTGAACCGCTG
GCTCGTATGGAAGTGTCTGTTCTTACCTCTCTGCTGCAGCACTTCTCTTCTGTTCCGACCGGTACGCCG
CGTCCGTCTCACACGGTGTTCGCTTTCCTGGTTTCTCCGTCTCCGTACGAAGTGTGCGCTGTTCCGCGTGGA
GCTCACCACCACCACTGA

SEQ ID NO 6:

Translation of SEQ ID NO:5

MAKKTSSKGRPPGPLPLPGLGNLLHVDFQNTPYCFDQLRRRFQDVFSLQLAWTPVVVLNGLAAVREALVTHGEDT
ADRPPVPITQILGFGRPSQGVFLARYGPAWREQRRFSVSTLRNLGLGKKSLEQWVTEEAACLCFAFANHSGRPFR
PNGLLDKAVSNVIASLTCGRRFEYDDPRFLRLDLAQEGLKEESGFLREVLNAVVPVLLHIPALAGKVLRFQKAF
TQDELLEHRTWDPAPPRDLTEAFLAEMEKAKGNPESSFNDENLRIVVADLFSAGMVTSTTLAWGLLLMIL
HPDVQRRVQQEIDDVIGQVRRPEMGDQAHPYTTAVIHEVQRFGDIVPLGMTHMTSRDIEVQGFRIKGTTLITN
LSSVLKDEAVWEKPFREFHPEHFLDAQGHFVKPEAFLPFSAGRRACLGEPLARMELFLFTSLLQHFSFSVPTGQP
RPSHHGVFAFLVSPSPYELCAVPRGAHHH

SEQ ID NO:7

3A4

ATGGCATACGGTACTCATTACATGGTCTGTTTAAAAAAGTGGGAATTCCAGGGCCACACCTCTGCCTTTTTTGG
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GGCTTTTATGATGGTCAACAGCCTGTGCTGGCTATCACAGATCCTGACATGATCAAAACAGTGCTAGTGAAAGAA
TGTTATTCTGTCTTACAAACCGGAGGCCTTTTGGTCCAGTGGGATTATGAAAAGTGCCATCTCTATAGCTGAG
GATAGAAAGTGAAGAGATTACGATCATTGCTGTCTCCAACCTTCACCAAGTGGAAAACCAAGGAGATGGTCCCT
ATCATTGCCAGTATGGAGATGTGTTGGTGAGAAATCTGAGGCGGGAAGCAGAGACAGGCAAGCCTGTCACCTTG

AAAGACGTCTTTGGGGCCTACAGCATGGATGTGATCACTAGCACATCATTGGAGTGAACATCGACTCTCTCAAC
AATCCACAAGACCCCTTTGTGGAAAACACCAAGAAGCTTTTAAGATTTGATTTTTTGGATCCATTCTTTCTCTCA
ATAACAGTCTTTCCATTCTCATCCCAATTCTTGAAGTATTAATATCTGTGTGTTTCCAAGAGAAGTTACAAAT
TTTTTAAGAAAATCTGTAAAAAGGATGAAAGAAAGTCGCCTCGAAGATACACAAAAGCACCGAGTGGATTTCCTT
CAGCTGATGATTGACTCTCAGAATTCAAAAGAACTGAGTCCCACAAAGCTCTGTCCGATCTGGAGCTCGTGGCC
CAATCAATTATCTTTATTTTTGCTGGCTATGAAACCACGAGCAGTGTTCTCTCCTTCATTATGTATGAACTGGCC
ACTCACCTGATGTCCAGCAGAACTGCAGGAGGAAATTGATGCAGTTTTACCCAATAAGGCACCACCCACCTAT
GATACTGTGCTACAGATGGAGTATCTTGACATGGTGGTGAATGAAACGCTCAGATTATTCCCAATTGCTATGAGA
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AGCTATGCTCTTCACCGTGACCCAAAGTACTGGACAGAGCCTGAGAAGTTCCTCCCTGAAAGATTGAGCAAGAAG
AACAAGGACAACATAGATCCTTACATATACACACCCTTTGGAAGTGGACCCAGAACTGCATTGGCATGAGGTTT
GCTCTCATGAACATGAACTTGCTCTAATCAGAGTCCTTCAGAACTTCTCCTTCAAACCTTGTAAGAAACACAG
ATCCCCCTGAAATTAAGCTTAGGAGGACTTCTTCAACCAGAAAACCCGTTGTTCTAAAGGTTGAGTCAAGGGAT
GGCACCGTAAGTGGAGCCCACCATCACCATTGA

SEQ ID NO:8
3A4

MAYGTHSHGLFKKLGIPGPTPLPFLGNIILSYHKGFCMFDMECHKKYGKVWGFYDGQPVLAITDPDMIKTVLVKE
CYSVFTNRFPFGVPGFMKSAISIAEDEEWKRLRLSPTFTSGKLKEMVPIIAQYGDVLRNLRREAETGKPVTL
KDVFGAYSMDVITSTSTSGVNIIDSLNPNQDPFVENTKKLLRDFDLDPFFLSITVFPFLIPILEVLNICVFPREVTN
FLRKSVKRMKESRLDTQKHRVDFLQLMIDSONSKETESHKALSDLELVAQSIIFIFAGYETTSSVLSFIMYELA
THPDVQKQLQEEIDAVLPNKAPPTYDTVLQMEYLDMVNETLRLFPAMRLERVCKKDVEINGMFIPKGVVVMIP
SYALHRDPKYWTEPEKFLPERFSKKNKDNIDPYIYTPFGSGPRNCIGMRFALMNMKLALIRVLQNFSEKPKKETQ
IPLKLSLGLLLQPEKPVVLKVESRDGTVSGAHHHH

SEQ ID NO:9
AKKTSSKGR

SEQ ID NO:10
MAKKTSSKGR

SEQ ID NO:11
MAYGTHSHGLFKK

SEQ ID NO:12
5' CAAGAGGAAGCCCGCTGCCTTGTGGAGGAG3'

SEQ ID NO:13
5' CTCCTCCACAAGGCAGCGGGCTTCCTCTTG3'

SEQ ID NO:14
5' CCCTCGTCACTTTCTGGATGAAGGTGGAAAATTTAAG3'

SEQ ID NO:15
5' CTTAAAATTTCCACCTTCATCCAGAAAGTGACGAGGG3'

SEQ ID NOs:16-71:
2D6ass5'1 CATATGGCTAAAAAACCTCTTCTAAAGGCCGACCGCCGGGTCCGCTGCC
2D6ass5'2 GCTGCCAGGCCTGGGTAACCTGCTGCATGTGGACTTCCAGAACACCCCGT
2D6ass5'3 ACTGCTTCGACCAGCTGCGTCGTTTCGGTGACGTGTTCTCTCTGCAG

2D6ass5'4 CTGGCTTGGACCCCGGTTGTTGTTCTGAACGGTCTGGCTGCTGTTTCGCGA
2D6ass5'5 AGCTCTGGTTACCCACGGTGAAGACACCGCTGACCGTCCGCCGGTCCCGA
2D6ass5'6 TCACCCAGATCCTGGGTTTTTGGTCCGCGTTCCCAAGGTGTTTTCTGGCT
2D6ass5'7 CGTTACGGACCGGCTTGGCGTGAACAGCGTCGTTTCTCTGTTTCTACCT
2D6ass5'8 GCGTAACCTGGGTCTGGGTAAAAATCTCTGGAACAGTGGGTACCGAAG
2D6ass5'9 AAGCTGCATGCCGTGTGCGCTGCTTTCGCTAACCACTCTGGTCGTCCGTTT
2D6ass5'10 CGTCCGAACGGTCTGCTGGACAAAGCTGTTTCTAACGTTATCGCTTCTCT
2D6ass5'11 GACCTGCGGCCGCCGTTTTTGAATACGACGACCCGCGTTTCTGCGTCTGC
2D6ass5'12 TGGACCTGGCTCAGGAAGGTCTGAAAGAGGAGTCTGGTTTCTGCGTGAA
2D6ass5'13 GTTCTGAACGCTGTTCCGGTTCTGCTGCACATCCCAGCTCTGGCTGGTAA
2D6ass5'14 AGTTCGTGCGTTTCCAGAAAGCATTCTGACCCAGCTGGACGAACGTGCTGA
2D6ass5'15 CCGAACACCGTATGACCTGGGACCCGGCTCAGCCGCCACGTGACCTGACC
2D6ass5'16 GAAGCTTTCTGGCTGAAATGGAAGCTAAAGGTAACCCGGAATCTTC
2D6ass5'17 TTTCAACGATGAAAATCTGCGTATCGTTGTTGCTGACCTGTTCTCCGCGG
2D6ass5'18 GTATGGTTACCACTCTACCACTGGCTTGGGGTCTGCTGCTGATGATC
2D6ass5'19 CTGCACCCGGATGTACAGCGTCGTGTTTACGAGGAAATCGACGACGTTAT
2D6ass5'20 TGGCCAGGTTCGTGCGCCGGAATGGGTGACCAAGCTCAGATGCCGTACA
2D6ass5'21 CCACCGCTGTATCCACGAAGTTTACGCGCTTCGGTGACATCGTTCCGCTG
2D6ass5'22 GGTATGACCCACATGACCTCTCGTGACATCGAAGTTCAGGGTTCCGTAT
2D6ass5'23 CCGGAAAGGTACCACTGATCACCACCTGTCTTCTGTTCTGAAAGACG
2D6ass5'24 AAGCTGTTTGGGAAAAACCGTTCCGTTTCCATCCGGAACACTTCCTGGAC
2D6ass5'25 GCTCAGGGTCACTTCGTTAAACCGGAAGCTTTCTGCGGTCTCTGCTGG
2D6ass5'26 TCGTCGTGCTTGCCTGGGTGAACCGCTGGCTCGTATGGAACGTTCTCTGT
2D6ass5'27 TCTTCACCTCTCTGCTGCAGCACTTCTCTTCTCTGTTCCGACCGGTCAG
2D6ass5'28 CCGCGTCCGTCTCACCACGGTGTTCGCTTTCCTGGTTTCTCCGTCTCC
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2D6ass3'2 AAACACCGTGGTGAGACGGACGCGGCTGACCGGTGCGGAACAGAGAAAGAG
2D6ass3'3 AAGTGCTGCAGCAGAGAGGTGAAGAACAGGAACAGTTCATACGAGCCAG
2D6ass3'4 CGGTTACCCAGGCAAGCAGCAGCAGCAGAGAACGGCAGGAAAGCTT
2D6ass3'5 CCGGTTTAAACGAAGTGACCTGAGCGTCCAGGAAGTGTCCGGATGGAAA
2D6ass3'6 CGGAACGGTTTTTCCCAAACAGCTTCGTCTTTCAGAACAGAAGACAGGT
2D6ass3'7 GGTGATCAGGGTGGTACCTTTCGGGATACGGAACCCCTGAACTTCGATGT
2D6ass3'8 CACGAGAGGTCAATGTGGTGCATACCCAGCGGAACGATGTCACCGAAGCG
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2D6ass3'10 CATTTCCGGCCGACGAACCTGGCCAATAACGTCGTGATTTCCTGCTGAA
2D6ass3'11 CACGACGCTGTACATCCGGGTGCAGGATCATCAGCAGCAGACCCCAAGCC
2D6ass3'12 AGGGTGGTÁGAGGTGGTAACCATACCCGCGGAGAACAGGTGAGCAACAAC
2D6ass3'13 GATACGCAGATTTTCATCGTTGAAAGAAGATTCCGGGTACCTTTAGCTT
2D6ass3'14 TTTCCATTTTCAGCCAGGAAAGCTTCGGTCAGGTACGTTGGCGGCTGAGCC
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2D6ass3'16 GAATGCTTTCTGGAAACGCAGAACTTTACCAAGCAGAGCTGGGATGTGCA
2D6ass3'17 GCAGAACCGGAACAGCGTTTACGAACCTTACGCAGGAACCAAGACTCCTCT
2D6ass3'18 TTCAGACCTTCTGAGCCAGGTCCAGCAGACGCAGGAACGCGGGTCTGC
2D6ass3'19 GTATTGGAACCGCGCGCCGAGGTGAGAGAAGCGATAACGTTAGAAACAG
2D6ass3'20 CTTTGTCCAGCAGACCGTTCGGACGGAACGGACGACAGAGTGGTTAGCG
2D6ass3'21 AAAGCAGCGCACAGGCATGCAGCTTCTTCGGTAACCCACTGTTCCAGAGA
2D6ass3'22 TTTTTTACCCAGACCCAGGTACGCAGGGTAGAAACAGAGAAACGACGCT
2D6ass3'23 GTTCACGCCAAGCCGTCGCTAACGAGCCAGGAAACACCTTGGGAACGC
2D6ass3'24 GGACCAAAACCCAGGATCTGGGTGATCGGGACCGGCGGACGGTCAGCGGT
2D6ass3'25 GTCTTACCGTGGGTAAACAGAGCTTCGCGAACAGCAGCCAGACCGTTCA
2D6ass3'26 GAACAACAACCGGGTCCAAGCCAGCTGCAGAGAGAACACGTCACCGAAA
2D6ass3'27 CGACGACGCAGCTGGTCAAGCAGTACGGGGTGTCTGGAAGTCCCATG
2D6ass3'28 CAGCAGGTTACCCAGGCCTGGCAGCGGCAGCGGACCCGGCGGTGCGCCTT

SEQ ID NO: 72
GTAACCTGGGTCTGGGTAAAAATCTCTG

SEQ ID NO:73
CAGAGATTTTTTACCCAGACCCAGGTTAC

SEQ ID NO:74
5'-GGAATTCATATGGCTCTCATCCCAGACTTGGCC-3'

SEQ ID NO:75
5'-TGCGGTCGACTCAATGGTGATGGTGGGCTCCACTTACGGTGCCATCC-3'

SEQ ID NO:76
5'-TTACATATGGCATATGGTACTCATTACATGGTCTGTTTAAAAAACT
GGGAATTCCAGGGCCACACC-3'

SEQ ID NO:77
2C9-FGloop

MAKKTSSKGRPPGPTPLPVIGNILQIGIKDISKSLTNLSKVYGPVFTLYFGLKPIVVLHGYEAVKEALIDLGEF
SGRGIFPLAERANRGFGIVFSNGKKWKEIRRFSLMTLRNFGMGKRSIEDRVQEEARCLVEELRKTASPCDPTFI
LGCAPCNVICSIIFHKRFDYKDQQFLNLMEKLNENIKILSSPWIQVYNNFPALLDYFPGTHNKLKNVAFMKSYI
LEKVKEHQESMDMNNPQDFIDCFLMKMEKEKHNQPSFTIESLENTAVDLFGAGTETTSTTLRYALLLLKHPEV
TAKVQEEIERVIGRNRSPCMQDRSHMPYTDVVHEVQRYIDLLPTSLPHAVTCDIKFRNYLIPKGTITILISLTSV
LHDNKEFPNPEMFDPHHFLDEGGNFKKSKYFMPFSAGKRICVGEALAGMELFLFLTSILQNFNLKSLVDPKNLDT
TPVVNGFASVPPFYQLCFIPVHHH

SEQ ID NO:78
2C9-P220 V60C

MAKKTSSKGRPPGPTPLPVIGNILQIGIKDISKSLTNLSKVYGPVFTLYFGLKPIVVLHGYEAVKEALIDLGEF
SGRGIFPLAERANRGFGIVFSNGKKWKEIRRFSLMTLRNFGMGKRSIEDRVQEEARCLVEELRKTASPCDPTFI
LGCAPCNVICSIIFHKRFDYKDQQFLNLMEKLNENIKILSSPWIQICNNFPTIIDYFPGTHNKLKNVAFMKSYI
LEKVKEHQESMDMNNPQDFIDCFLMKMEKEKHNQPSFTIESLENTAVDLFGAGTETTSTTLRYALLLLKHPEV
TAKVQEEIERVIGRNRSPCMQDRSHMPYTDVVHEVQRYIDLLPTSLPHAVTCDIKFRNYLIPKGTITILISLTSV
LHDNKEFPNPEMFDPHHFLDEGGNFKKSKYFMPFSAGKRICVGEALAGMELFLFLTSILQNFNLKSLVDPKNLDT
TPVVNGFASVPPFYQLCFIPVHHH

SEQ ID NO:79
2C9-P220

MAKKTSSKGRPPGPTPLPVIGNILQIGIKDISKSLTNLSKVYGPVFTLYFGLKPIVVLHGYEAVKEALIDLGEF
SGRGIFPLAERANRGFGIVFSNGKKWKEIRRFSLMTLRNFGMGKRSIEDRVQEEARCLVEELRKTASPCDPTFI
LGCAPCNVICSIIFHKRFDYKDQQFLNLMEKLNENIKILSSPWIQICNNFPTIIDYFPGTHNKLKNVAFMKSYI
LEKVKEHQESMDMNNPQDFIDCFLMKMEKEKHNQPSFTIESLENTAVDLFGAGTETTSTTLRYALLLLKHPEV
TAKVQEEIERVIGRNRSPCMQDRSHMPYTDVVHEVQRYIDLLPTSLPHAVTCDIKFRNYLIPKGTITILISLTSV
LHDNKEFPNPEMFDPHHFLDEGGNFKKSKYFMPFSAGKRICVGEALAGMELFLFLTSILQNFNLKSLVDPKNLDT
TPVVNGFASVPPFYQLCFIPVHHH

SEQ ID NO:80
2C9-FG Loop-K206E

MAKKTSSKGRPPGPTPLPVIGNILQIGIKDISKSLTNLSKVYGPVFTLYFGLKPIVVLHG
YEAVKEALIDLGEFSGRGIFPLAERANRGFGIVFSNGKKWKEIRRFSLMTLRNFGMGKR
SIEDRVQEEARCLVEELRKTASPCDPTFILGCAPCNVICSIIFHKRFDYKDQQFLNLME
KLNENIEILSSPWIQVYNNFPALLDYFPGTHNKLKNVAFMKSYILEKVKEHQESMDMNN

PQDFIDCFLMKMEKEKHNQPSEFTIESLENTAVDLFGAGTETTSTTLRYALLLLKHPEV
TAKVQEEIERVIGRNRSPCMQDRSHMPYTDVVHEVQRYIDLLPTSLPHAVTCDIKFRNY
LIPKGTILISLTSVLHDNKEFPNPEMFDPHHFLDEGGNFKKSKYFMPFSAGKRICVGEA
LAGMELFLFLTSILQNFNLKSLVDPKNLDTTPVVNGFASVPPFYQLCFIPVHHHH

SEQ ID NO:81
2C9 wild type P450

MDSLVVLVLCCLLLLLSLWRQSSGRGKLPPGPTPLPVIGNILOIGIKDISKSLTNLSKVYGPVFTLYFGLKPIV
VLHGYEAVKEALIDLGEFSGRGIFPLAERANRGFGIVFSNGKKWKEIRRFSLMTLRNFGMGKRSIEDRVQEEAR
CLVEELRKTASPCDPTFILGCAPCNVICSII FHKRFDYKDQQFLNLMEKLNENIKILSSPWIQICNNFSPIIDY
FPGTHNKLLKNVAFMKSYLEKVKEHQESMDMNNPQDFIDCFLMKMEKEKHNQPSEFTIESLENTAVDLFGAGTE
TTSTTLRYALLLLKHPEVTAKVQEEIERVIGRNRSPCMQDRSHMPYTDVVHEVQRYIDLLPTSLPHAVTCDIK
FRNYLIPKGTILISLTSVLHDNKEFPNPEMFDPHHFLDEGGNFKKSKYFMPFSAGKRICVGEALAGMELFLFLT
SILQNFNLKSLVDPKNLDTTPVVNGFASVPPFYQLCFIPVHHHH